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EXAMINER

GAY, JENNIFER HAWKINS

ART UNIT	PAPER NUMBER
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3672

DATE MAILED: 11/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,240

Applicant(s)

DUHON ET AL.

Examiner

Jennifer H Gay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,3,5-11 and 24-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34 is/are allowed.
- 6) ☒ Claim(s) 2,3,5-11,27-33 and 35-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 2, 3, 27, 28, 35, 36, and 44-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Arizmendi (US 5,941,313).

Regarding claim 2: Arizmendi discloses an apparatus usable in a wellbore. The apparatus includes an element formed from titanium or other material that has sufficient strength and elasticity to bend without fracturing, i.e. a superplastic material. The element may be used as a seal (Abstract).

Regarding claim 3: Arizmendi discloses an apparatus usable in a wellbore. The apparatus includes an element formed from titanium or other material that has sufficient strength and elasticity to bend without fracturing, i.e. a superplastic material. The element may be used as an anchor. The examiner notes that wellbore packers inherently act as an anchor for the tubular string they are attached to.

Regarding claim 27: The superplastic element causes the seal to engage downhole tubing or casing.

Regarding claim 28: The apparatus is a packer.

Regarding claim 35: The packer may also function as an anchor.

Regarding claim 36: The packer includes a seal 26 that is actuated by the movement of a first sleeve 30 relative to a second sleeve 28.

Regarding claims 44-49: An elongation to failure in excess of 200%, a fine equi-axed grain structure that remains stable during deformation, and a fine equi-axed grain

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structure in a range of 2 to 10 micrometers are all inherent properties of a superplastic material.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al. (US 3,712,376) in view of Miyake et al. (US 6,056,835).

Owen et al. discloses an apparatus usable in a wellbore. The apparatus includes an element that is formed from aluminum (6:37-43). The element may function as a sand screen (8:18-21).

Owen et al. discloses all of the limitations of the above claims except that the element was formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Owen et al. such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miszewski et al. (US 5,131,470) in view of Miyake et al. (US 6,056,835).

Miszewski et al. discloses a wellbore shock absorber that includes aluminum elements (6:8-9).

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Brieger such that the element was made from a superplastic material such as that taught by Miszewski et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brieger (US 4,122,899) in view of Miyake et al. (US 6,056,835).

Brieger discloses an apparatus usable in a wellbore. The apparatus includes an element that is formed from aluminum and includes a releasable connector (3:60-63).

Brieger discloses all of the limitations of the above claims except for the element being specifically formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Brieger such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

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7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al. (US 6,454,001) in view of Miyake et al. (US 6,056,835).

Thompson et al. discloses an apparatus usable in a wellbore. The apparatus includes an element that is formed from aluminum and includes a releasable connector (5:65-6:7).

Thompson et al. discloses all of the limitations of the above claims except for the element being specifically formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Thompson et al. such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

8. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Henning (US 4,042,019) in view of Miyake et al. (US 6,056,835).

Henning discloses an apparatus usable in a wellbore. The apparatus includes an element formed from aluminum (4:42-45). The element is included in a shape charge.

Henning discloses all of the limitations of the above claims except that the element was formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Henning such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed

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the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

9. Claims 10, 11, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mohaupt (US 4,081,031) in view of Miyake et al. (US 6,056,835).

Regarding claim 10: Mohaupt discloses an apparatus usable in a wellbore. The apparatus includes an element that is formed from aluminum (4:5-7) and includes a weak point connector (8:58-60).

Mohaupt discloses all of the limitations of the above claims except for the element being specifically formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Mohaupt such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

Regarding claim 11: Mohaupt discloses an apparatus usable in a wellbore. The apparatus includes an element that is formed from aluminum (4:5-7) and a heating device to heat the element to a temperature at which the material will plastically deform.

Mohaupt discloses all of the limitations of the above claims except for the element being specifically formed from a superplastic material, i.e. that aluminum is a superplastic material.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Mohaupt such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

Regarding claim 39: The heating device is a chemical propellant.

10. Claims 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arizmendi (US 5,941,313) in view of Mohaupt (US 4,081,031).

Regarding claim 30: Arizmendi discloses all of the limitations of the above claims except for a heating device to heat the superplastic material to a temperature at which the element exhibits superplastic behavior.

Mohaupt discloses a downhole heating element. Mohaupt further teaches using the heating element to deform the walls of the aluminum housing of the tool (4:4-7).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the apparatus of Arizmendi to include a heating element as taught by Mohaupt in order to have used a well known method for cause a superplastic material to exhibit superplastic behavior (1:19-30 of Miyake et al.). One would have been motivated to make such a combination because a means for increasing the ability of the element to expand would have been obtained, as inferred by Mohaupt.

Regarding claim 31: The apparatus includes a piston 30 to cause translation of the element.

Regarding claim 32: The heating device is a chemical propellant.

11. Claim 33 rejected under 35 U.S.C. 103(a) as being unpatentable over Arizmendi (US 5,941,313) in view of Gonzalez et al. (US 6,474,414).

Arizmendi disclose all of the limitations of the above claims except for the element further including a plug to block the flow of fluid through the bore of a conduit.

Gonzalez et al. teaches a downhole plug for blocking flow through a conduit. The plug is characterized as being made from a highly ductile and flowable solder such as aluminum (3:35-37, 6:17-18).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the element of Arizmendi to include a plug such as that taught by Gonzalez et al. in order to have been able to isolate sections of the wellbore from other sections of the wellbore (1:5-16). One would have been motivated to make such a combination because a means for easily installing and removing wellbore plugs would have been obtained, as taught by Gonzalez et al. (2:1-23).

12. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al. (US 3,712,376) in view of Miyake et al. (US 6,056,835) as applied to claim 5 above, and further in view of Mohaupt (US 4,081,031).

Owen et al. and Miyake et al. discloses all of the limitations of the above claims except for a heating device to heat the superplastic material to a temperature at which the element exhibits superplastic behavior.

Mohaupt discloses a downhole heating element. Mohaupt further teaches using the heating element to deform the walls of the aluminum housing of the tool (4:4-7).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the apparatus of Owen et al. in view of Miyake et al. to include a heating element as taught by Mohaupt in order to have used a well known method for cause a superplastic material to exhibit superplastic behavior (1:19-30 of Miyake et al.). One would have been motivated to make such a combination because a means for increasing the ability of the element to expand would have been obtained, as inferred by Mohaupt.

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13. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Timmons (US 3,380,528) in view of Meitzen (US 3,713,486) and Miyake et al. (US 6,056,835).

Timmons discloses an apparatus usable in a wellbore. The apparatus includes a fishing tool that includes expandable element (figures 2 and 3) for engaging the inner wall of a conduit to be removed from the wellbore.

Timmons discloses all of the limitations of the above claims except for the element being formed from a superplastic material.

Meitzen discloses a wellbore anchoring devices that includes slips 14 similar to those of Timmons. Meitzen further teaches that the slips are formed from aluminum.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Timmons such that the expandable element of the fishing tool was formed from aluminum as taught by Meitzen in order to have used an expandable element that would have deformed upon contact with the "fish". One would have been motivated to make such a combination because a means for removing a "fish" from the wellbore without damaging the tubular or other lost equipment would have been obtained.

Miyake et al. teaches that aluminum is a well known superplastic (2:9-13, 5:48-65). It is further well known that aluminum is a ductile material.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified Timmons in view of Meitzen such that the element was made from a superplastic material such as that taught by Miyake et al. in order to have formed the element from a material that was capable of being subjected to expanding without failure (1:5-10). One would have been motivated to make such a combination because an element that was more versatile and less prone to failure would have been obtained, as taught by Miyake et al. (36:1-20).

14. Claims 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmer (US 6,056,059) in view of Mohaupt (US 4,081,031).

Ohmer discloses an apparatus usable in a wellbore. The apparatus includes junction seal assembly that is formed from a super plastic material such as Monel or

Inconel (14:55-59). The junction assembly includes tubing that is inserted into a lateral wellbore (Figure 18A-18E).

Ohmer discloses all of the limitations of the above claims except for a heating device to heat the superplastic material to a temperature at which the element exhibits superplastic behavior.

Mohaupt discloses a downhole heating element. Mohaupt further teaches using the heating element to deform the walls of the aluminum housing of the tool (4:4-7).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the apparatus of Ohmer to include a heating element as taught by Mohaupt in order to have used a well known method for cause a superplastic material to exhibit superplastic behavior (1:19-30 of Miyake et al.). One would have been motivated to make such a combination because a means for increasing the ability of the element to expand would have been obtained, as inferred by Mohaupt.

Allowable Subject Matter

15. Claim 34 is allowed.

Response to Arguments

16. In view of Montaron not qualifying as prior art under 35 USC 102(e), the rejection of claims 2, 27-33, and 37 as rejected over Metcalfe in view of Montaron and Miyake has been withdrawn.

17. Applicant's arguments with respect to claim 6 have been considered but are moot in view of the new ground(s) of rejection.

18. Applicant's arguments filed 14 October 2004 have been fully considered but they are not persuasive.

Applicant has argued that Arizmendi does not disclose an element formed of a superplastic material. Specifically, applicant argues that the titanium disclosed by

Arizmendi is not a superplastic material because the fact that a body is able to bend without fracturing does not make it superplastic and that a material does not automatically become a superplastic material, that a specific process is required.

In response, the examiner first notes that applicant does not claim a specific process by which a material can be made superplastic nor does the specification provide any basis for this argument. Further, the specification (beginning on page 3, line 28) defines a superplastic material as either "aluminum, titanium, magnesium, or other light metal" and does not list specific alloys of the above metals thus indicating that applicant has defined the above metals as generally superplastic materials. It is noted that the addition of just specificities would be considered new matter at this point in the prosecution.

Applicant has argued that Arizmendi does not teach or suggest a heating device to heat a superplastic material to a temperature such that the element exhibits superplastic behavior. In response, the examiner notes that she has not indicated that Arizmendi discloses this feature and has used Mohaupt to teach such a heating device.

However, applicant has also argued that Mohaupt does not teach or suggest such a heating device either because the heating device taught by Mohaupt causes bursting, failure, or swelling of the housing, the aluminum element of the heating device, thus clearly not teaching heating a superplastic material such that it exhibits superplastic behavior.

In response, the examiner first notes that Mohaupt only teaches that the housing will fail or burst if formed from rigid plastic and the swelling taught by Mohaupt would be considered equivalent to expansion of the superplastic material. Further, Mohaupt was used merely to teach the heating of a superplastic material, i.e. aluminum, in the wellbore and the specifics of the device taught by Mohaupt are not relevant to the rejection. It is also noted that Miyake et al. clearly teaches that it is considered well known that the heating superplastic materials to cause them to exhibit superplastic behavior (4:4-7).

Applicant has argued that Arizmendi does not disclose a plug formed of a superplastic material. In response, the examiner notes that she has not indicated that Arizmendi teaches this feature and has relied upon Gonzalez to teach such a plug.

However, applicant has also argued that Gonzalez does not teach such plug because the plug taught by Gonzalez is a molten metal plug, i.e. the plug is formed by melting a metal.

In response, the examiner notes that the plug of Gonzalez is formed from aluminum, which has been defined as a superplastic material thus meeting the limitations of the claim. Further, the plug disclosed by applicant is described, beginning on page 4, line 16, as being heated until it transitions to a molten state, i.e. flowable element 12, thus it is unclear as how the fact that the plug of Gonzalez is a molten metal plug is "clearly different from" the element disclosed by applicant.

Applicant has argued that Owen does not teach a sand screen being formed of a superplastic material. In response, the examiner notes that the sand screen of Owen is described as being formed of aluminum, which has been, defined a superplastic material. This same response is applied to the arguments applicant has made regarding Brieger, Thompson, Menning, Mohaupt, Timmons, Meitzen, and Ohmer.

Applicant has argued that there is no motivation within Miyake of using the disclosed superplastic material in a downhole apparatus. In response, the examiner notes that Miyake has been used merely further clarify that aluminum is a known superplastic material. The reference is not specific as to the use of the disclosed alloy as it is concerned only with the alloy itself thus the above argument is not pertinent to the rejection. Further, Miyake was used merely to supply a teaching that aluminum was a known superplastic material as admitted by applicant beginning in line 30 of page 3 of the specification of the instant application. Miyake was specifically to define the elements of Owens, Brieger, Thompson, or Mohaupt as being formed from a superplastic material.

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Regarding the above stated "admission" by applicant, applicant has argued that such a statement is not proper because the disclosure of the present invention cannot be used as an admission of prior art.


In response, the examiner first notes that the statement made by the examiner above and in the previous Office Action was not used to reject any of the pending claims. However, the segment of the specification that the examiner has referred to, page 3, line 28 through page 4, line 15, is actually considered prior art as it is merely an excepted definition of a superplastic material, which has been provided by the applicant. This is supported by Werner et al. (US 6,464,019; previously cited), which provides the same excepted definition of a superplastic material (5:59-6:27).


Conclusion

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer H Gay whose telephone number is (703) 308-2881. The examiner can normally be reached on Monday-Thursday, 6:30-4:00 and Friday, 6:30-1:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (703) 308-2151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jennifer H Gay
Patent Examiner
Art Unit 3672

JHG 
November 18, 2004